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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/473,315	12/28/1999	LARRY EUGENE MOSLEY	884,209/US1	9830
21186	7500	12/24/2003	EXAMINER	
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402			THOMAS, ERIC W	
			ART UNIT	PAPER NUMBER

2831

DATE MAILED: 12/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/473,315

Applicant(s)

MOSLEY, LARRY EUGENE

Examiner

Eric W Thomas

Art Unit

2831

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 2, 3, 5-8, 11, 12 and 30-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5, 32 and 33 is/are allowed.
- 6) ☒ Claim(s) 2, 3, 6-8, 11-12, 30-31, 34-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 10/27/03
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**Introduction:**

The examiner acknowledges, as recommended in M.P.E.P. 707.04, the applicant's submission of the amendment dated 10/27/103. At this point, claims 2, 5, 6, 11, 35-36 have been amended. Thus, claims 2-3, 5-8, 11-12, 30-37 are pending in the instant application.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-3, 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naito et al. (US 6,034,864) in view of Farooq et al. (US 6,072,690) and Devoe (US 6,366,443).

Naito et al. disclose a capacitor comprising: at least four conductive layers embedded in a dielectric wherein the at least four conductive layers includes a first plurality of conductive layers interlaced with a second plurality of conductive layers, and a plurality of vias coupling the at least four conductive layers to a plurality of connection sites (see fig. 2A), wherein the plurality of vias includes a first set of vias and a second set of vias (see fig. 2A) and the first set of vias couples the first plurality of conductive layers to a first plurality of connection sites on the capacitor and the first set of vias extends through openings in and is electrically isolated from the second plurality of conductive layers and the second

set of vias couples the second plurality of conductive layers to a second plurality of connection sites on a surface of the capacitor and the second set of vias extends through openings in and is electrically isolated from the first plurality of conductive layers.

Naito et al. disclose the claimed invention except for the first and second set of vias electrically couple to connection sites on at least two surfaces of the capacitor nor do they disclose the thickness of the capacitor being between .5 to about 1 millimeter.

Farooq et al. (see fig. 3A) teach that it is known in the capacitor art to form connection sites on both surfaces of the capacitor body wherein vias couple the internal electrodes to the connection sites. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Naito et al. using connection sites on at least two surfaces of the capacitor body, since such a modification would provide additional connection points (thereby saving room within the electrical component).

Devoe et al. teach that it is common in the capacitor art to form a capacitor having a thickness of 1 mm (see abstract). It would have been obvious matter of design choice to form the capacitor of Naito et al. having a thickness of 1 mm, since such a modification is a change in size of the component. A change in size is generally recognized as being within the level of ordinary skill in the art.

Regarding claim 3, Naito et al. disclose the claimed invention except for the capacitance being from 20 to 30 microfarads. It is well known in the capacitor art to form capacitor having a particular capacitance for an electrical

system. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the capacitor of Naito et al. having a capacitance of 20 to 30 microfarads since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding claim 30, Naito et al. disclose the claimed invention except for the electrodes are formed from a platinum material. Platinum is a well-known material used as electrodes in the capacitor art. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the conductive layers of Naito et al. using platinum, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Regarding claim 31, Naito et al. disclose the claimed invention except for the electrodes are formed from a palladium material. Palladium is a well-known material used as electrodes in the capacitor art. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the conductive layers of Naito et al. using palladium, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Farooq et al (US 6,072,690) in view of Mori (US 5,942,063) and Borland (US 4,663,189).

Regarding claim 6, Farooq et al. disclose (in fig. 3c) a plurality of first conductive layers (67), each of the plurality of first conductive layers formed on a first dielectric sheet (72); a plurality of second conductive layers, each of the plurality of second conductive layers formed on a second dielectric sheet (72), and the plurality of second conductive layers interlaced with the plurality of first conductive layers; a pair of dielectric sheets (see below) having a thickness, for providing a pair of substantially rigid outer surfaces for the plurality of second conductive layers interlaced with the plurality of first conductive layers, each of the pair of substantially rigid outer surfaces having a plurality of connection sites operable for coupling the capacitor to a substrate using a controlled collapse chop connection (C4); and a plurality of vias (64, 66) coupling the plurality of first conductive layers and the plurality of second plurality of second conductive layers to at least two of the plurality of connection sites.

Farooq et al. do not disclose the thickness of the pair of dielectric sheets having a thickness of slightly greater than 7 microns nor do they disclose the dielectric sheets are formed from a barium titanate.

Mori teaches it is known in the art to form ceramic dielectric sheets having a thickness of 7 microns (see col. 1 lines 30-50). It would have been an obvious matter of design choice to form the pair of dielectric sheets (all the ceramic sheets) having a thickness of slightly greater than 7 microns, since such a

modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art.

Borland teaches that it is known in the art to form dielectric sheets with a barium titanate. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the dielectric material of Farooq et al. using a barium titanate as taught by Borland, since such a modification would provide the capacitor with a high dielectric material.

Regarding claim 7, Farooq et al. disclose the claimed invention except for the material used in the conductive layers. Tungsten paste is a well-known material used as electrodes in the capacitor art. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the conductive layers of Farooq et al. using tungsten paste, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

Regarding claim 8, Farooq et al disclose the number of surfaces is two.

Claims 11-12, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Farooq et al (US 6,072,690) in view of Naito et al. (US 6,034,864) and Borland (US 4,663,189).

Farooq et al. disclose a multilayer capacitor having a pair of substantially rigid (\*inherent feature of a fired ceramic) outer surfaces; and at least two of the

plurality of pads are capable of being coupled to a substrate using a solder bump, wherein the multilayer capacitor includes a number of parallel conductive layers and the number of pads are coupled to the number of parallel conductive layers through vias. Farooq et al disclose the claimed invention except for the number of conductive layers is greater than about 50 nor do they disclose the material used in the outer surfaces of the capacitor. The capacitor of Farooq et al. is not limited to the illustrated embodiments.

Naito et al. claims a capacitor having any number (above 50 \*\*see claim 1 - col. 10 lines 5-11) electrodes can be used in a capacitor. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the capacitor of Farooq et al. using more than 50 electrodes layers as taught by Naito et al, since such a modification would increase the capacitance of Farooq et al.

Borland teaches that it is known in the art to form dielectric sheets (all dielectric sheets used in the capacitor including the two outer surfaces) with a barium titanate. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the dielectric material of Farooq et al. using a barium titanate as taught by Borland, since such a modification would provide the capacitor with a high dielectric material.

Regarding claim 12, Farooq et al. disclose the claimed invention except for the number of pads is greater than about 4000. The capacitor of Farooq et al. is not limited to the illustrated embodiments.



Naito et al. claims the number of connection portions can be greater than about 4000 (see claim 1 - col. 10 lines 12-17). It would have been obvious to one having ordinary skill in the art at the time the invention was made to form a capacitor of Farooq et al. having more than 4000 pads as claimed by Naito et al, since such a modification would increase the number of connection points thereby reducing the need to use multiple passive components; and it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ.

Regarding claim 36, Farooq et al. disclose the claimed invention except for the electrodes are formed from a platinum material. Platinum is a well-known material used as electrodes in the capacitor art. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the conductive layers of Farooq et al. using platinum, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Claim 34-35, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Farooq et al (US 6,072,690), Naito et al. (US 6,034,864), and Borland (US 4,663,189) as applied to claims 11, and 36 above, and further in view of Mori (US 5, 942, 063).

Regarding claim 34, Farooq et al. disclose the claimed invention except for the thickness of the pair of dielectric sheets having a thickness of slightly greater than 7 microns. Mori teaches it is known in the art to form ceramic

dielectric sheets having a thickness of 7 microns (see col. 1 lines 30-50). It would have been an obvious matter of design choice to form the pair of dielectric sheets (all the ceramic sheets) having a thickness of slightly greater than 7 microns, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art.

Regarding claim 35, Farooq et al. disclose the claimed invention except for the material used in the conductive layers. Tungsten paste is a well-known material used as electrodes in the capacitor art. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the conductive layers of Farooq et al. using tungsten paste, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

Regarding claim 37, Farooq et al. disclose the claimed invention except for the thickness of the pair of dielectric sheets having a thickness of slightly greater than 7 microns. Mori teaches it is known in the art to form ceramic dielectric sheets having a thickness of 7 microns (see col. 1 lines 30-50). It would have been an obvious matter of design choice to form the pair of dielectric sheets (all the ceramic sheets) having a thickness of slightly greater than 7 microns, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art.

### **Response to Arguments**

Applicant's arguments with respect to claims 2-3, 6-8, 11-12, 30-31, 34-37 have been considered but are moot in view of the new grounds) of rejection.

### **Allowable Subject Matter**

Claims 5, 32-33 are allowed.

### **Conclusion**

2. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric W Thomas whose telephone number is (703) 305-0878. The examiner can normally be reached on Mon & Sat 9:00AM - 9:30PM; Tues-Fri 5:30PM-10:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 703-308-3682. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

ewt

*Dean A. Reichard* 12/15/03

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